farm and home

ANIMAL HUSBANDRY NO. 7

FACT SHEET

Complete Rations for Growing and Finishing Swine

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The rations suggested here are designed to meet the needs of growing swine and to promote rapid and efficient gains. They are based on commonly available feedstuffs. In many instances similar rations have given excellent results in experiments conducted by the Department of Animal Husbandry.

The protein, calcium, and phosphorus requirements of growing swine are shown in table1.

Table 1. Protein, calcium, and phosphorus requirements of growing swine: alternate programs

Weight range of pigs, pounds	Percent protein	Percent calcium	Percent phosphorus
40 to 75	15 to 16	0.7	0.5
75 to 125	13 to 14	0.6	0.5
125 to 200	12	0.5	0.4
	-----OR-----		
40 to 100	15	0.7	0.5
100 to 200	12 to 13	0.5	0.4

Rations containing 16, 14, and 12 percent protein for the growth periods 40 to 75, 75 to 125, and 125 pounds to market weight, respectively, give excellent results. When only one ration change was made, rations containing 15 or 16 percent protein for pigs weighing 40 to 100 pounds, and 12 or 13 percent protein after the pigs weighed 100 pounds gave excellent rate and efficiency of gain in University of Minnesota experiments. Carcass meatiness was improved when the levels of protein recommended above were compared with lower levels.

Meeting the protein requirements of pigs is a matter of supplying enough of the essential amino acids -- the building blocks of protein. Soybean meal is unique as a plant protein in its capacity to provide the necessary amounts of amino acids to supplement cereal grains when rations contain adequate protein. Other protein supplemental feeds also work well in combination with soybean meal and can be used when the cost per unit of protein does not exceed that of a pound of protein from soybean meal. The example rations shown in table 2 illustrate a variety of rations containing different percentages of protein. These examples also demonstrate how other protein supplemental feeds can be used in combination with soybean meal.

The addition of effective antibiotics has been found to increase daily gains approximately 10 percent, and in some instances has resulted in slight reductions in feed required per unit of gain. Add antibiotics at the rate of 10 to 20 grams per ton of finished feed until the pigs weigh 125 pounds. Antibiotic additions have not consistently increased gains of pigs weighing over 125 pounds, and if added should not be added at a rate of more than 10 grams per ton of complete feed.

Arsanilic acid and 3 nitro-4-hydroxyphenylarsonic acid are also effective growth promotants. If they are used, add according to manufacturers' recommendations.

Copper sulfate ($CuSO_4 \cdot 5H_2O$) has been reported to be an effective growth promotant. In University of Minnesota trials the addition of 100 to 200 p. p. m. of copper in complete rations did not improve rate and efficiency of gain. Copper sulfate can be toxic and must be finely ground and uniformly mixed in the ration. The addition of 1 pound of copper sulfate ($CuSO_4 \cdot 5H_2O$) per ton of complete ration will provide 127 p. p. m. of copper.

These are but a few examples of complete rations. Many other combinations are possible using combinations of protein supplemental feeds indicated and also substituting other sources of energy feeds. Grain sorghum (milo) can be substituted for corn. Finely ground oats can replace up to 25 percent of the corn with little change in rate or efficiency of gain, or carcass excellence. Finely ground ear corn (equivalent fineness to that obtained with 1/4-inch screen in hammer mill) containing not more than 15 percent moisture can be used for pigs weighing 50 to 60 pounds or more. If ground ear corn is used calculate protein requirement on basis of 7 percent protein for ear corn.

It is also possible to prepare excellent rations by mixing commercially available protein-mineral-vitamin supplements with available feed grains. The information shown in table 3 shows the ratios of protein supplements containing different amounts of protein in corn to provide rations containing different levels of protein.

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Table 2. Examples of complete rations for growing swine

	Percent protein in the final ration									
	16	16	15	15	14	14	13	13	12	12
Ground yellow corn, pounds	1,550	1,615	1,600	1,527	1,706	1,635	1,710	1,643	1,760	1,725
Tankage, digester, 60%, pounds	--	120	--	--	90	80	--	--	--	50
Soybean meal, 44%, pounds	400	240	350	330	180	160	250	220	200	100
Dehydrated alfalfa meal, pounds 17%, 60 mg. carotene, pounds	--	--	--	100	--	100	--	100	--	100
Dicalcium phosphate, pounds*	20	5	20	14	--	--	10	10	10	3
Ground limestone, pounds*	20	10	20	19	14	10	20	17	20	12
Salt, pounds**	10	10	10	10	10	15	10	10	10	10
Suggested vitamin additions per ton***										
Riboflavin, grams	1	1	1	1	1	1	1	1	1	1
Calcium pantothenate, grams	4	4	4	3	4	3	4	3	4	4
Niacin, grams	5	5	5	5	5	5	4	4	4	4
Vitamin B_{12}, milligrams	10	5	10	5	6	6	10	10	10	8

Vitamin A, International Units (I. U.) Add 2 million I. U. per ton when corn is old, heat damaged, or has lost vitamin A activity.

Vitamin D, International Units (I. U.) Add 200,000 I. U. per ton when pigs are not exposed to sunshine and during winter months.

* If desired, or necessary, to interchange steamed bone meal and dicalcium phosphate, make substitutions at rate of 5 pounds dicalcium phosphate and 2 pounds of ground feeding limestone for 6 pounds of steamed bone meal, or vice versa.

** The addition of 10 pounds of a high zinc trace mineralized salt containing 0.8 percent of zinc will provide 40 p. p. m. of supplemental zinc as a safeguard against parakeratosis.

*** Except for vitamin A where suggested addition provides more than twice the pig's requirement, the vitamin additions suggested are minimums. There is no advantage to adding gross excesses.

Table 3. Amounts of corn required per 100 pounds of complete rations based on corn and supplements containing different amounts of protein. *

Protein in ration	Percent of protein in the supplement						
	32	36	38	40	42	44	46
	pounds corn required in each 100 pounds of complete ration						
18	60	65	68	70	72	73	75
16	68	73	74	76	78	79	80
15	72	76	78	79	81	82	83
14	77	80	82	83	84	85	86
13	81	84	85	86	87	88	89
12	85	87	88	89	90	90	91

* The protein content of corn is assumed to be 8.5 percent. All figures are rounded to the nearest whole number.

MANAGEMENT TIPS

1. Avoid anemic pigs by proper treatment of nursing pigs; feed a good pig starter.
2. Castrate the pigs before they are 3 weeks of age, and while they are still nursing the sow.
3. Vaccinate to prevent hog cholera.
4. Follow a good sanitation program to avoid parasites such as roundworms.
5. Spray to prevent mange and lice.
6. Feed properly balanced rations.

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